

27. A isotonic environment is best for animals, while a hypotonic environment is best for plants.
28. **Facilitated diffusion** is when polar molecules and ions impeded by the lipid bilayer of the membrane diffuse passively with the help of transport proteins that span the membrane. Certain kidney cells have a high number of aquaporins, allowing them to reclaim water from urine before it is excreted. This is a form of passive transport.
29. Enzymes act like catalysts, while transport proteins aid in the movement of different substances.

7.4 - Active Transport uses Energy to Move Solutes Against their Gradients

30. **Active transport** requires a cell to expend energy, which means moving solutes against their concentration gradients, usually through the supply of ATP. Passive Transport do not require a cell to expend energy, and is a spontaneous passing of substances.
31. The **sodium potassium pump** pumps ions against their concentration gradients: sodium ion concentration is high outside the cell and low inside, while potassium ions concentration is low outside the cell and high inside.
32. **Membrane potential** is the voltage across a membrane, and it is created by an unequal distribution of anions and cations on the cytoplasmic side and the extracellular side.
33. **Electrochemical gradient** is the two forces that drive the diffusion of ions across a membrane: a chemical force(the ion's concentration gradient), and an electrical force(the effect of the membrane potential on the ion's movement).
34. An **electrogenic pump** is a transport protein that generates voltage across a membrane. The sodium potassium pump is the main type of electrogenic pump in animals. The main electrogenic pump in plants, fungi, and bacteria is a **proton pump**, which actively transports protons out of the cell.
35. **Cotransport** means that a single ATP-powered pump that transports a specific solute can indirectly drive the active transport of several other solutes. Essentially, it's active transport driven by a concentration gradient.